

AC NO: 90-58C

DATE: 4/7/75



# ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

SUBJECT: **VOR** COURSE ERRORS RESULTING FROM **50 kHz** CHANNEL MISSELECTION

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1. PURPOSE. This circular provides information concerning a potentially serious situation when a **200** channel **VOR** receiver is inadvertently mistuned by **50 kHz** from the frequency of a **100 kHz VOR** ground station,
  2. CANCELLATION. Advisory Circular **90-58B** dated September **12, 1974**.
  3. BACKGROUND. The possibility of an erroneous course indication exists, at least for certain types of **200** channel airborne receivers, when the receiver is inadvertently mistuned **50 kHz** from the ground station frequency. (THIS PROBLEM DOES NOT EXIST WITH **100** CHANNEL RECEIVERS.) This condition is due to radiation of harmonics of the **9960 Hz** modulation from the ground station. When such harmonics exist, they may be received and detected by the aircraft's navigation receiver. The indications produced can appear to be useful information. The ground station identification may be heard, the flag alarm hidden and a course indication displayed. The course indication will probably be near the **180** degree radial (from) or its reciprocal **360** degrees (to), and will not vary as the position of the aircraft is changed with respect to the **VOR** ground station.
  4. DISCUSSION. Several methods are being investigated to provide the pilot a warning indication when a mistuning or misselection error has occurred. A method that has been successful in greatly reducing the probability of off channel course indication is the "ADJACENT CHANNEL SENSOR." This method involves detection of an off frequency condition of **50 kHz** from the desired **VOR** frequency and causes a flag to appear at the **pilot's indicator**. This type of modification may be adaptable to various **50 kHz VOR** receivers. Equipment users may consult their equipment manufacturer for possible modifications to existing equipment that would provide the warning flag.
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5. **PRECAUTION.** Until a totally effective **mistuned/misselection** sensor modification is developed for various types of receivers, the **possibility** of false course information being displayed when a **200** channel receiver is off-tuned by **50 kHz** will continue. All pilots are therefore cautioned to observe the following:

- a. Exercise extreme care in the initial selection of the correct frequency numbers on **the VOR** receiver channel selector panel.
- b. If the identification tone sounds **unusually garbled or** noisy, reconfirm the channel selection to the correct frequency numbers.
- c. Be particularly alert to the **CDI**, and **FLAG** indications after changing the frequency numbers from one **VOR** ground station to the frequency numbers of the next **VOR** ground station.

1	1	4	5	0
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In **200** channel equipment the last digit is zero for selection of a **100 kHz** channel frequency.

1	1	4	5	5
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In **200** channel equipment the last digit is a five for selection of a **50 kHz** channel frequency. Misselection of the last digit may mistune the **VOR** receiver by **50 kHz**.

The above example is for only those receivers with **five-digit** frequency **selectors**.

- d. Those aircraft with **DME** capability that have a common **VOR/DME** channel selector will not display distance information when the **VOR** channel selector is mistuned by **50 kHz** from the frequency of a **VOR** ground station that has a co-located **DME**.

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